

# Paper 1 Content

<b>B1 Cell Structure and Transport</b>	<b>Analysis</b>	<b>Revision</b>
Can describe the difference between eukaryotic and prokaryotic cells.		
Can identify the scale and size of cells including the use of orders of magnitude.		
Can recognise, draw and label plant and animal cells.		
Can describe the functions of organelles in plant and animal cells.		
Can judge the relative size of organelles in images from a scale.		
<i>Can use a light microscope to observe, draw and label cells (RP1).</i>		
Can give examples of specialised plant and animal cells.		
Can explain how the structure of specialised plant and animal cells relates to their function.		
Can explain the importance of cell differentiation.		
Can explain the differences between cell differentiation in plants and animals.		
Can describe how microscopy techniques have development over time.		
Can explain the advantages of an electron microscope over a light microscope.		
Can explain how electron microscopy has improved our understanding of cells.		
Can calculate the magnification, real size and image size using a formula.		
Can describe the process of diffusion.		
Can identify substances which move by the process of diffusion, and state where they move about in the human body.		
Can explain the different factors which affect the rate of diffusion.		
Can calculate and compare surface area to volume ratios in different organisms.		
Can explain why single celled organisms do not require specialist exchange surfaces whilst multi cellular organisms do.		
Can describe how the small intestine and lungs in mammals, gills in fish, and roots in leaves in plants are adapted for exchanging materials.		
Can explain how different adaptations increase the effectiveness of the exchange of materials.		
Can describe the process of osmosis.		
Can recognise, draw and interpret diagrams which show the process of osmosis taking place.		
Can calculate percentage gain and loss of mass of plant tissues during osmosis.		
Can plot and interpret graphs showing osmosis taking place.		
<i>Can investigate the effect of changing solute concentrations on the mass of plant tissue (RP3).</i>		
Can describe the process of active transport.		
Can give examples of substances which move by active transport in plants and animals.		
Can compare and contrast the process of diffusion, osmosis and active transport.		
<b>B2 Cell Division</b>	<b>Analysis</b>	<b>Revision</b>
Can identify the location of chromosomes and genes.		
Can describe the three main stages of the cell cycle.		

Can describe what happens during mitosis.		
Can explain the importance of mitosis and give examples of when it might occur.		
Can describe what a stem cell is.		
Can describe the different functions of stem cells in embryos, adult animals and plants.		
Can explain the differences between the action of stem cells in embryos, adult animals and plants.		
Can name some conditions which could potentially be treated by stem cells.		
Can describe the use of stem cells in therapeutic cloning.		
Can describe the benefits of producing clones of plants using stem cells from plant meristems.		
Can evaluate the benefits, risks social issues and ethical issues of the use of stem cells in medicine.		
<b>B3 Organisation and the Digestive System</b>	<b>Analysis</b>	<b>Revision</b>
Can state the different levels of organisation.		
Can arrange the different levels of organisation into order.		
Can label a diagram of the digestive system.		
Can describe the role of different organs in the digestive system.		
Can state where the enzymes carbohydrase, protease and lipase are produced and describe what they do.		
Can describe what the products of digestion are used for in the body.		
Can explain the lock and key theory of enzyme action.		
Can describe and explain the effects of changing temperature and pH on enzyme action.		
Can describe the role of bile and explain how it speeds up digestion of lipids.		
<i>Can state the reagents used in food tests for starch, glucose, protein and fat and recall what a positive result looks like (RP4).</i>		
<i>Can use a continuous sampling technique to investigate the effects of pH on enzyme action (RP5).</i>		
<b>B4 Organising Animals and Plants</b>	<b>Analysis</b>	<b>Revision</b>
Can describe the role of the heart.		
Can label a diagram of the circulatory system.		
Can describe the structure of the heart including the major blood vessels going in and out of it.		
Can describe the role of the pacemaker.		
Can describe and explain the differences between arteries, veins and capillaries.		
Can carry out calculations of blood flow from rate and volume.		
Can recognise, and recall the names of, the different components of blood.		
Can describe the roles of the different components of blood and explain how they are adapted for their function.		
Can describe the causes and effects of coronary heart disease (CHD).		
Can describe and evaluate the different treatments for coronary heart disease (CHD).		
Can describe and evaluate the different treatments for a faulty heart valve.		
Can describe and evaluate the use of artificial hearts and transplant hearts.		

Can label a diagram of the respiratory system.		
Can describe the structure of the lungs.		
Can recall and describe the function of different tissues found in a plant.		
Can label a diagram of a leaf.		
Can describe the roles of the different parts of a leaf.		
Can describe how root hair cells, xylem and phloem cells are adapted to their functions.		
Can describe and explain how factors such as temperature, light intensity, humidity and air movement affect the rate of transpiration.		
Can describe how the rate of transpiration can be measured.		
Can carry out calculations of transpiration from rate and volume.		
Can explain the distribution of stomata on different sides of the leaf.		
Can explain how stomata and guard cells control transpiration and gas exchange.		
Can compare and contrast transpiration and translocation.		
<b>B5 Communicable Diseases</b>	<b>Analysis</b>	<b>Revised</b>
Can describe the difference between communicable and non-communicable diseases.		
Can give examples of types of pathogen which cause disease.		
Can describe some of the ways that pathogens can spread.		
Can explain how bacteria and viruses can make us feel ill.		
Can describe the effects of the viral diseases measles, HIV and tobacco mosaic virus (TMV) and explain how they are spread and treated.		
Can describe the effects of the bacterial diseases salmonella and gonorrhoea and explain how they are spread and treated.		
BIO Can describe how bacteria multiply by binary fission.		
BIO Can describe how the action of antiseptics and antibiotics are tested on an agar gel plate.		
<i>BIO Can measure zones of inhibition on agar gel plates to investigate the effectiveness of antiseptics or antibiotics (RP2)</i>		
BIO Can describe how to prepare an uncontaminated culture of bacteria on an agar gel plate.		
BIO Can calculate the cross sectional areas of colonies of bacteria on an agar gel plate.		
BIO Can calculate the estimated number of bacteria in a population after a given time.		
<b>BIO Can express the estimated number of bacteria in a population in standard form.</b>		
Can describe the effects of the fungal disease rose black spot and explain how it is spread and treated.		
Can describe the effects of the protest disease malaria and explain how it is spread and treated.		
Can describe the non-specific defence mechanisms of the human body found on/in the skin, nose, trachea, bronchi and stomach.		
Can explain the role of the immune system in the defence against disease.		
Can describe the role of white blood cells in the immune system.		
<b>B6 Preventing and Treating Disease</b>	<b>Analysis</b>	<b>Revised</b>
Can describe the role of vaccinations.		
Can describe and explain how vaccinations work.		

Can describe the action and limitations of antibiotics.		
Can explain why the emergence of antibiotic resistant strains of bacteria is a concern.		
Can describe the role of painkillers.		
Can recall that many traditional drugs were obtained from plants and microbes but modern drugs may be synthesised.		
Can explain why new drugs are tested.		
Can describe the stages in the development of a new drug including the stages of preclinical and clinical testing.		
<b>BIO Can describe what monoclonal antibodies are.</b>		
<b>BIO Can describe how monoclonal antibodies are produced.</b>		
<b>BIO Can describe how monoclonal antibodies can be used.</b>		
<b>BIO Can evaluate the advantages and disadvantages of monoclonal antibodies.</b>		
BIO Can give examples of how plants can be infected by pathogens and insects.		
<b>BIO Can describe how plant diseases can be detected in a plant.</b>		
<b>BIO Can describe how plant diseases can be identified.</b>		
BIO can describe how plants can be damaged by mineral ion deficiencies such as nitrate and magnesium deficiency.		
BIO can describe physical, chemical and mechanical adaptations that plants have to defend themselves against microorganisms and animals.		
<b>B7 Non-Communicable Diseases</b>	<b>Analysis</b>	<b>Revised</b>
Can describe the relationship between disease and health.		
Can recall some of the causes of ill health, including diet, stress and life situations.		
Can describe how health can be both physical and mental.		
Can explain how different causes of ill health can interact, such as poor physical health leading to poor mental health.		
Can interpret diagrams and graphs show incidences of disease, including identifying correlations.		
Can explain the impact that ill health has on an individual, community and global scale.		
Can describe the effects of smoking on health, including the health of unborn babies.		
Can describe the effects of poor diet and lack of exercise on health.		
Can describe the effects of excessive alcohol on health, including the health of unborn babies.		
Can describe the effect of other carcinogens such as ionising radiation on health.		
Can explain what cancer is and identify risk factors which increase the risk of developing it.		
Can describe the difference between benign and malignant tumours.		
<b>B8 Photosynthesis</b>	<b>Analysis</b>	<b>Revised</b>
Can recall the word and symbol equations for photosynthesis.		
Can describe what the process of photosynthesis is and what it is needed for.		
Can explain the effects of changing light intensity, temperature, carbon dioxide concentration and amount of chlorophyll present on the rate of photosynthesis.		
Can draw and interpret graphs which demonstrate the effects of different factors on the rate of photosynthesis.		
<b>Can explain what a limiting factor is.</b>		

Can identify a limiting factor from a series of graphs.		
Can explain and use the inverse square law when discussing the effects of light intensity on the rate of photosynthesis.		
Can explain how limiting factors are considered when enhancing conditions inside a greenhouse to obtain maximum rate of photosynthesis and greatest profit.		
<i>Can investigate the effects of changing light intensity on the rate of photosynthesis (RP6).</i>		
Can describe how the glucose produced in photosynthesis is put to use in the plant.		
Can recall that in order to produce proteins nitrate ions absorbed from the soil are needed as well as glucose.		
<b>B9 Respiration</b>	<b>Analysis</b>	<b>Revised</b>
Can recall the word and symbol equations for aerobic respiration.		
Can describe what the process of aerobic respiration is and what it is needed for.		
Can recall the word equation for anaerobic respiration happening in muscles.		
Can recall the word equation for anaerobic respiration happening in plants and yeast cells and explain the importance of the process of fermentation.		
Can compare and contrast aerobic respiration with anaerobic respiration happening in muscles, and in plants and yeast cells.		
Can describe the changes that happen to heart rate, breathing rate and breathing volume when you exercise.		
Can describe what happens in muscles when they receive insufficient oxygen during exercise.		
<b>Can explain what happens to the oxygen debt following exercise.</b>		
Can describe what metabolism is.		
Can describe the chemical reactions which form the process of metabolism.		